Suff. 60,189/c

1/55

£300

First edition

Rare

12 lithographic plates

PLATES

OF THE

CEREBRO-SPINAL NERVES,

WITH REFERENCES;

FOR THE USE OF

MEDICAL STUDENTS.

BY

PAUL B. GODDARD, M. D.,

PROSECTOR OF ANATOMY IN THE UNIVERSITY OF PENNSYLVANIA; MEMBER OF THE ACADEMY OF NATURAL SCIENCES, OF THE PHILADELPHIA MEDICAL SOCIETY, &c.

PHILADELPHIA:
PUBLISHED BY J. G. AUNER,
No. 331 MARKET STREET.
1837.

L.C.

350343

THIS BOOK IS NO LONGER THE PROPERTY OF THE JOHN CREAR LIBRARY

Entered according to Act of Congress in the year 1837, by PAUL B. GODDARD, M. D., in the Clerk's Office of the District Court of the United States, for the Eastern District of Pennsylvania.

WELLCOME LIBRARY INSTITUTE

PRINTED BY T. K. AND P. G. COLLINS.

TO

W. E. HORNER, M. D.

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF PENNSYLVANIA,

DISTINGUISHED ALIKE

FOR HIS SKILL AND PROFOUND RESEARCH AS AN

ANATOMIST,

AND HIS MANY VIRTUES IN PRIVATE LIFE,

THIS WORK IS RESPECTFULLY

Dedicated,

BY HIS GRATEFUL FRIEND,

THE AUTHOR.

TO

MEDICAL STUDENTS.

Having but a few years back been one of your number, and felt the want of assistance in the way of Plates to elucidate Anatomical Structure, and, knowing that in some respects this want is not yet supplied to the American Student, I am furnished with a strong inducement to attempt a work of this kind. The Nerves have always been a stumbling block to the Student, in consequence of the difficulty of dissecting and studying them in their various relations; and while Plates of the Arteries of various grades of value, are daily presented to him, as yet, no satisfactory work on the Nerves has been furnished.

I should do a great injustice to the beautiful and exact work of Mr. Swan, which has but lately appeared, if I did not exclude it from the above sweeping declaration; but the price of Mr. Swan's work is too high for the majority of students, and the plates are so highly finished, that it would suit the practised anatomist better than the mere tyro. For the Plates exhibiting the Nerves of the Extremities, however, I am

L 611.83
J 700
377439

mainly indebted to that work, as they are there shown in a distinct and correct manner.

The advance which the art of lithography has made, and its comparative cheapness, will enable me to place at your disposal a complete series of Plates to suit any of the standard descriptive works of the day, at a very low rate.

It is not pretended that these Plates are original; on the contrary, they are almost all taken from some larger work, the best and most appropriate culled for your use. Few of them, moreover, are presented in their original guise, for it has been found necessary to add in one place and subtract in another, to make the view sufficiently comprehensive, and at the same time to avoid the confusion which an immense number of filaments must necessarily present to the eye. This has led to the modification of every Plate to a certain extent, as for instance, the omission of Arteries, which (while it will in a trifling degree diminish their value as points of reference for Surgical Anatomy) renders them abundantly more intelligible. The minute student may also perceive the absence of some small filaments and a few anastomoses, but they are rarely attended to by a student of medicine, and are hence incompatible with the character of this work.

The Plates are accompanied by References, which will enable the student, whilst following a lecture, or reading a description, to place his finger on the object of his search.

At the present day, it is so customary to describe the Nerves from

below, upward, that it may seem *outré* to adhere to the old numerical method, but the facility of thus acquiring and remembering the various trunks—must be my apology.

It was my intention at first to have given a Plate of the Great Sympathetic, but on attempting to reduce it to the size of this work, it was found to have lost its value in consequence of the confusion incident to the crowding of the numerous plexuses into so small a space. And besides, the large plate of Mr. Manec, which was republished in this country by Dr. Pancoast, is so excellent, and so generally possessed by students, that its absence will hardly be felt.

In conclusion, I may express my sincere desire to facilitate your arduous course of study, and if these Plates should in any way contribute to that end, they will have fully accomplished the intentions of

Your Friend and well wisher,

PAUL B. GODDARD.

OF THE NERVES.

THERE are Forty-three pairs of Nerves which arise from the Brain and Spinal Marrow; twelve of these pairs arise from the Brain, and the remaining thirty-one from the Spinal Medulla. Of the twelve pairs arising from the Brain, two originate from the Cerebrum, viz: the 1st pair, or Olfactory, and the 3d pair, or Motor Oculi. Three originate from the Pons Varolii, viz: the 2d, or Optic, the 4th, or Pathetic, and the 5th, or Trifacial; and seven arise from the Medulla Oblongata, viz: the 6th, or Motor Externus, the 7th, or Auditory and Facial, the 8th consisting of the Par Vagum, Glosso-Pharyngeal and Spinal Accessory, and the 9th or Hypo-Glossal.

The Nerves arising from the base of the Brain are divided into 3 classes. Those having a specific sensibility as the Optic, those which are subservient to voluntary motion as the 3d and 6th, and those whose functions are of a mixed character.

The Nerves arising from the Medulla Spinalis are devoted both to sensation and motion, the former faculty being derived from their Posterior, and the latter from their Anterior Roots.

These latter Nerves are divided into 5 classes, depending upon the part of the Spinal Column from which they emerge. They are called Sub-Occipital, Cervical, Dorsal, Lumbar and Sacral, there being 1 Sub-Occipital, 7 Cervical, 12 Dorsal, 5 Lumbar, and 6 Sacral.

REFERENCES

TO THE PLATES IN WHICH THE SEVERAL NERVES MAY BE FOUND.

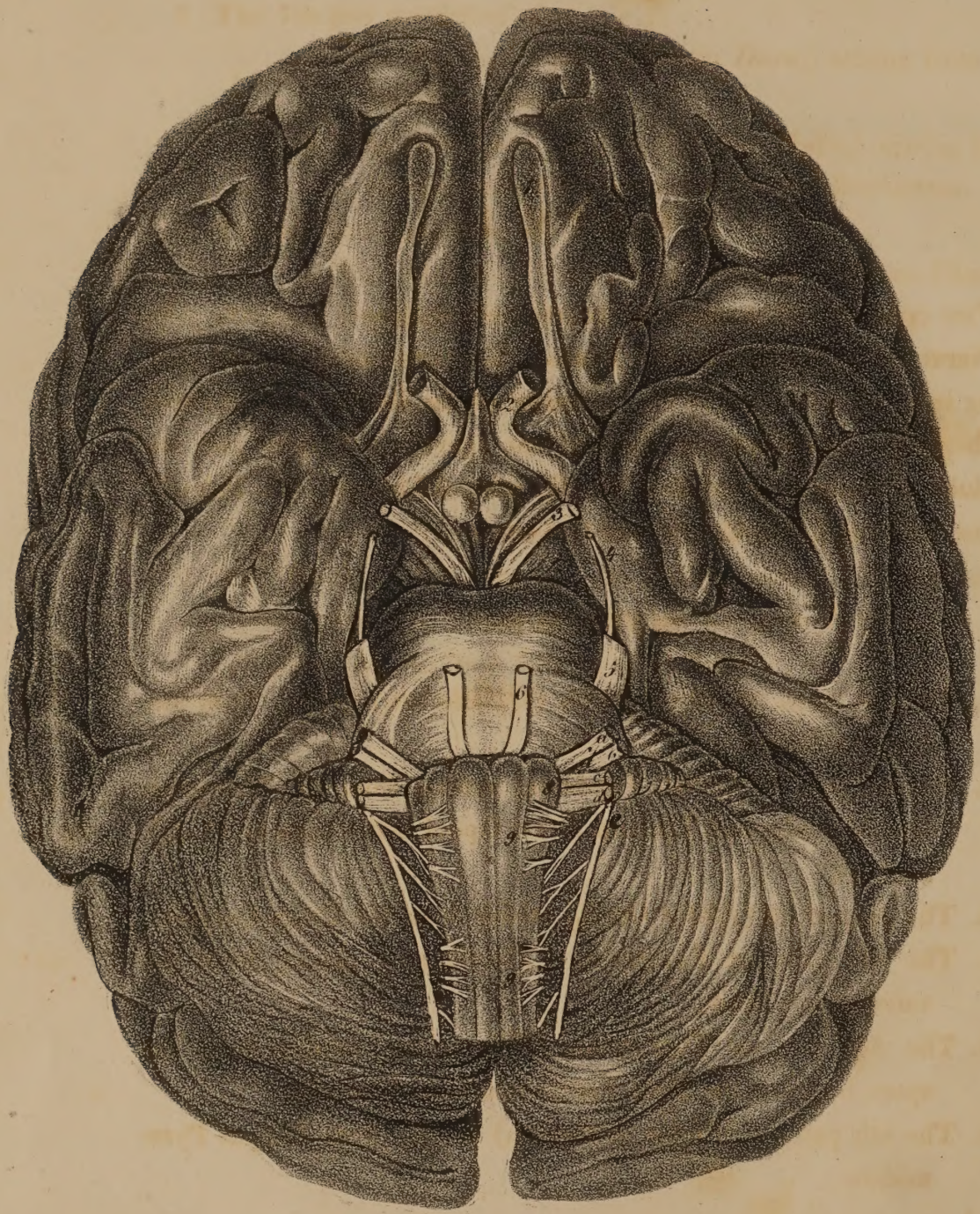
CEREBRAL NERVES.

1st pair, Olfactory, (*Nervus Olfactorius,*) Pl. II.
2d pair, Optic, (*Nervus Opticus,*) Pl. III.
3d pair, Eye-moving, (*Nervus Motor Oculi,*) Pl. III.
4th pair, Pathetic, (*Nervus Trochlearis,*) Pl. III, & VI.
5th pair, Trifacial, (*Nervus Trigeminus,*) Pl. II, III, IV, & V.
6th pair, Eye-abducting, (*Nervus Motor Externus,*) Pl. III.
7th pair, Facial, (*Nervus Facialis, Portio Dura,*) Pl. V.
Auditory, (*Nervus Auditorius, Portio Mollis,*) Pl. V.
8th pair, Par Vagum, (*Nervus Pneumogastricus,*) Pl. VI.
Glosso-Pharyngeal, (*N. Glosso-Pharyngeus,*) Pl. VII.
Spinal Accessory, (*Nervus Accessorius,*) Pl. VI.
9th pair, Hypoglossal, (*Nervus Hypoglossus,*) Pl. VI, & VII.

SPINAL NERVES.

The Spinal Nerves and their ramifications are exhibited in Plates V, VIII, IX, X, XI, & XII.

THE
JOHN CRERAR
LIBRARY



Lehmann & Duval Lith.ts

PLATE I.

The opposite plate represents the point of emergence of twelve pairs of Nerves from the base of the Brain. The *exact origin* is not seen, being in most cases deep in the substance of the Brain. The division of the Brain into lobes, the Cerebellum, the Pons Varolii, and the Medulla Oblongata, as well as the Corpora Albicantia, the Infundibulum, and the Crura Cerebri are also seen.

REFERENCES.

1. The 1st pair, or Olfactory, (*Olfactorius,*) arising from the Corpora Striata.
2. The 2d pair, or Optic, (*Opticus,*) arising from the Tubercula Quadrigemina and Thalami Nervi Optici better seen in Pl. III. Fig. 1st.
3. The 3d pair, or (*Motor Oculi,*) arising from the Crura Cerebri.
4. The 4th pair, or Pathetic, (*Trochlearis,*) arising from the valve of the Brain.
5. The 5th pair, or Trifacial, (*Trigeminus,*) arising from the space between the Pons Varolii and Crus Cerebelli.
6. The 6th pair, or (*Motor Externus,*) arising from Corpus Pyramidale.

7. The 7th pair consisting of
    a. The FACIAL NERVE, (*Portio Dura,*) arising from the Medulla Oblongata.
    b. The AUDITORY NERVE, (*Portio Mollis,*) arising from the Calamus Scriptorius and Corpus Restiforme.
8. The 8th pair consisting of
    c. The GLOSSO-PHARYNGEAL NERVE, (*Glosso-Pharyngeus,*) arising from the Corpora Restiformia.
    d. The PNEUMOGASTRIC, (*Par Vagum,*) arising from the Corpus Restiforme.
    e. The SPINAL ACCESSORY, (*Accessorius,*) arising from the Medulla Oblongata and Spinalis, as low down as the 7th Cervical Nerve by about ten Roots.
9. The Roots of the 9th pair, or HYPOGLOSSAL, (*Hypoglossus,*) arising from the fissure between the Corpora Pyramidalia and Olivaria, having from four to eight Roots.

THE
JOHN CRERAR
LIBRARY

Fig. 1st

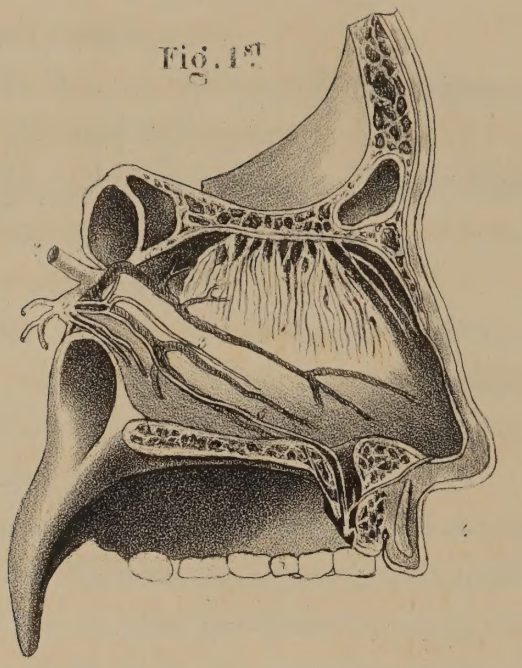
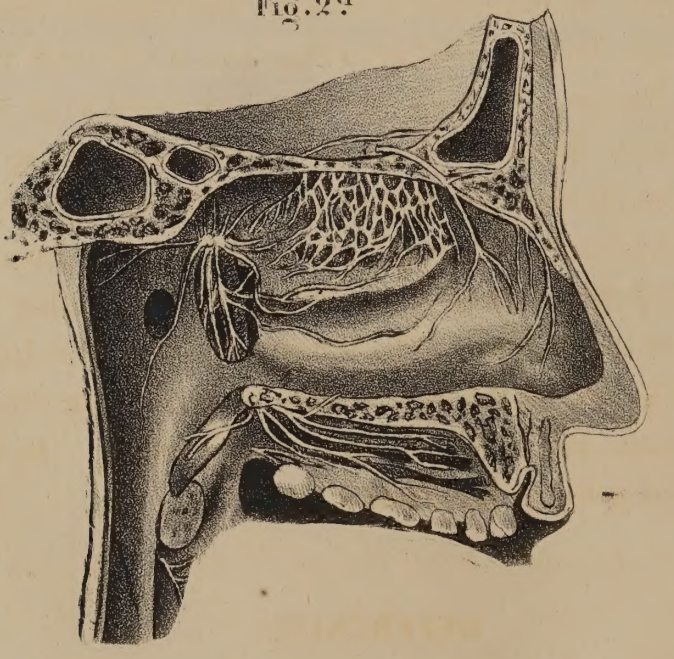


Fig. 2d



Lehman & Duval Lith.rs

PLATE II.

The opposite plate represents the distribution of the 1st pair, or Olfactory, as well as some of the branches of the 5th pair. The distribution of the fibrils on the Septum Narium is seen in Fig. 1st. and will be observed to be Penicillous without any Anastomoses; whereas, the fibrils on the Turbinated Bones are seen in Fig. 2d. to form a complete net work. A Ganglion is seen in the Foramen Incisivum, to which both the Spheno-Palatine, (Fig. 1st. 3, 3,) and the Posterior Palatine Nerves, (Fig. 2d. 3,) run. A branch of the 5th is seen to penetrate the Nose, (Fig. 2d. 1,) and course along the Middle and Inferior Turbinated Bones, and another, the Internal Nasal, (Fig. 2d, 2, 2, 2,) is seen entering the Nose through the Anterior Foramen in the Cribriform Plate of the Ethmoid, and cruising along the under surface of the Os Nasi. The internal branch of the Internal Nasal is seen in Fig. 1st. on the dark shading in front of the other Nerves, it has no reference, but is forked like a snake's tongue. In Fig. 2d. a Filament is seen going to the Frontal Sinus.

REFERENCES.

Fig. 1st. 1. Filaments of Olfactory, on Septum Narium.

2, 2. Second Trunk of 5th or Superior Maxillary.

3, 3. Naso-Palatinus of Hunter.

4. Palatine Ganglion in Foramen Incisivum.

Fig. 2d. 1. Branch of 5th from Posterior Palatine. The Olfactory Fibrils on the Turbinated Bones are seen just above.

2, 2, 2. Internal Nasal.

3. Spheno-Palatine Branches.

THE
JOHN CRERAR
LIBRARY

Fig. 2d

Fig. 1st

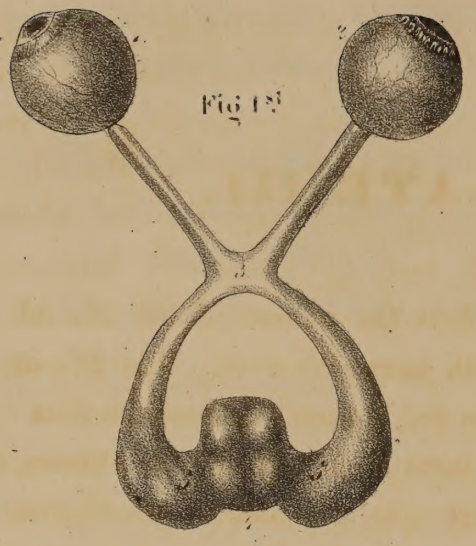


Fig. 3d

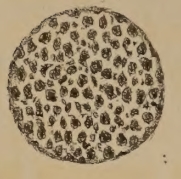
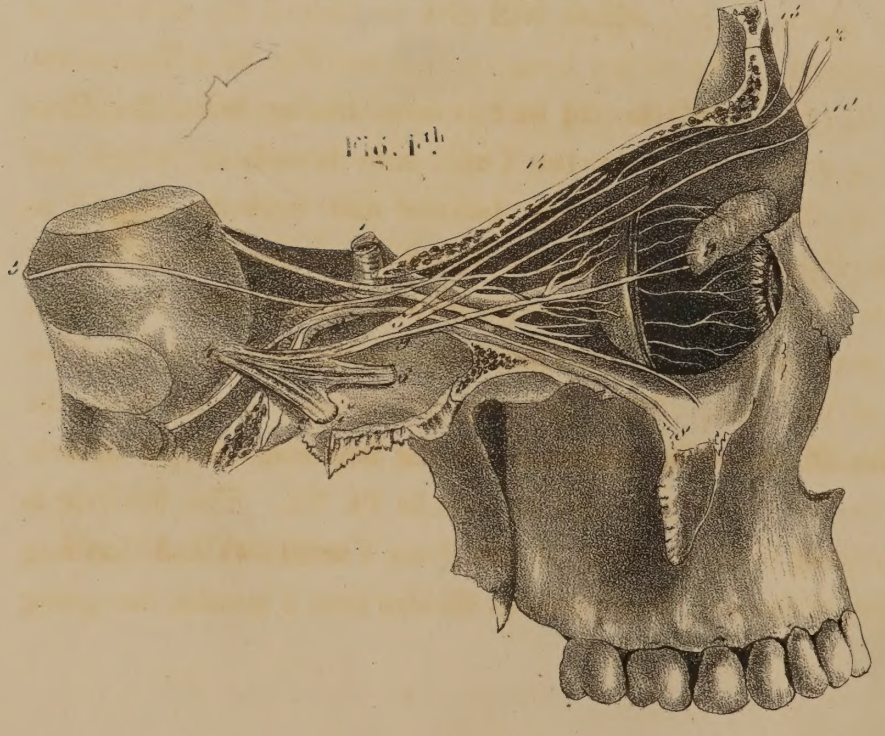


Fig. 4th



Lehman & Duval Lith.rs

PLATE III.

The opposite plate exhibits the course of the 2d, 3d, 4th, first branch of the 5th, and the 6th pairs of Nerves. The 2d pair, or Optic, are seen at their origins from the Tubercula Quadrigemina. (Fig. 1st. 4, 5, 5). They are seen to form their junction or Chiasm, and then enter the Eyeball. In one eye (2), the mode of entering the Sclerotic Coat is visible, and in the other (1), the Retina is seen attached to the extremity of the Nerve. At Fig. 2d and 3d are seen magnified sections of the Optic Nerve, which will give an idea of the structure of Nerves in general. Fig. 2d is a Longitudinal, and Fig. 3d a Transverse Section. In (Fig. 4th) the 3d pair is seen arising from the Crus Cerebri (2), and dividing in the Orbit into branches; which are distributed to the Rectus Superior, Inferior and Internus, as well as the Levator Palpebræ and Obliquus Inferior. A short trunk is seen forming the Lenticular Ganglion, (vertically under No. 14,) from which are seen proceeding the Ciliary Nerves to be lost on the Choroid Coat of the Eye. The 4th pair (3), is seen arising from the valve of the Brain, to be distributed to the Superior Oblique Muscle of the Eye—this Nerve may also be seen in Pl. VI. The 5th pair is shown emerging from the side of the Pons Varolii (4), and forming the Ganglion of Gasser: it afterwards divides into 3 trunks, one going

through the Sphenoidal Fissure (5, 9), another through the Foramen Rotundum (6), and a third entering the Foramen Ovale (7). The first of these, or Ophthalmic is seen to divide into 3 branches, the Lachrymal (9), the Nasal (10, 11), and the Frontal (12, 13). The Lachrymal is seen running to the Lachrymal Gland (9). The Nasal is seen to give a branch to the Lenticular Ganglion called its long root; it then divides into Internal Nasal, which disappears through the Anterior Ethmoidal Foramen (11), and External Nasal (10). The Frontal is seen to divide also into Internal (12), and External Frontal, (13). The 6th pair (8) is observed arising from the valve of the Brain, and as it crosses the Carotid Artery is seen to send down two or three filaments which form the commencement of the Sympathetic. It is distributed to the External Rectus Muscle.

REFERENCES.

Fig. 1st. Origin and Course of 2d pair or Optic.

1. Eye showing the Retina.
2. Eye with Sclerotic Coat.
3. Chiasm of the Optic Nerve.
4. Tubercula Quadrigemina.
5. Roots of Optic Nerves.

Fig. 2d. Longitudinal magnified section of Optic Nerve.

Fig. 3d. Transverse Do. Do. Do.

Fig. 4th. Origin and course of the 3d, 4th, first branch of 5th and 6th Pairs.

1. Optic Nerve, alongside of which is seen the cut end of the Carotid Artery.
2. Third Pair, (*Motor Oculi,*) going to Rectus Superior, Inferior and Internus, Levator Palpebræ and Obliquus Superior Muscles.
3. Fourth Pair, (*Patheticus,*) going to Superior Oblique Muscle, also seen in Pl. VI.
4. Fifth Pair, or Trifacial, (*Trigeminus.*)
5. First of 5th, or Ophthalmic.
6. Second of 5th, or Superior Maxillary.
7. Third of 5th, or Inferior Maxillary.
8. 8, 8, Sixth Pair, (*Motor Externus.*)
9. Lachrymal Branch.
10. External Nasal Branch.
11. Internal Nasal Branch.
12. Internal Frontal Branch.
13. External Frontal Branch.
14. Is placed vertically over and three-fourths of an inch above the Lenticular Ganglion.

THE
JOHN CRERAR
LIBRARY

Fig. 1st.

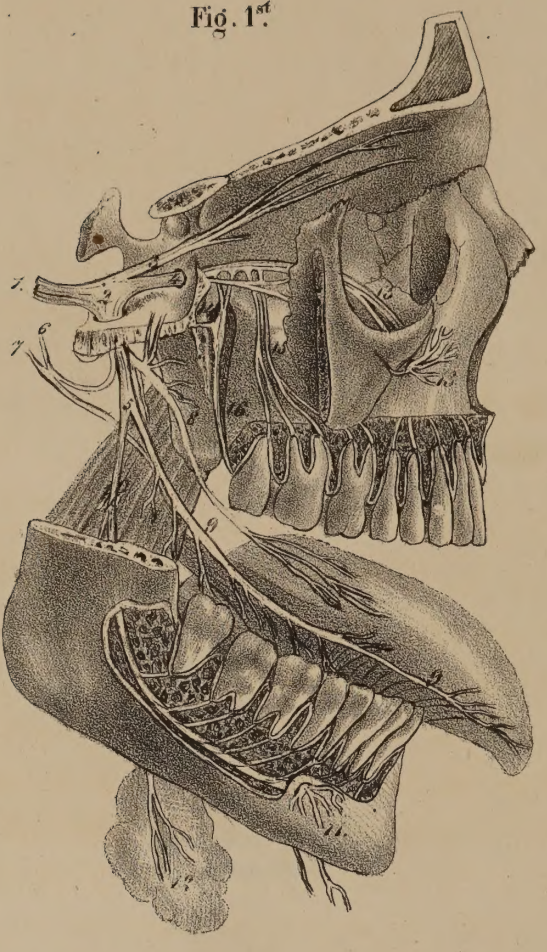
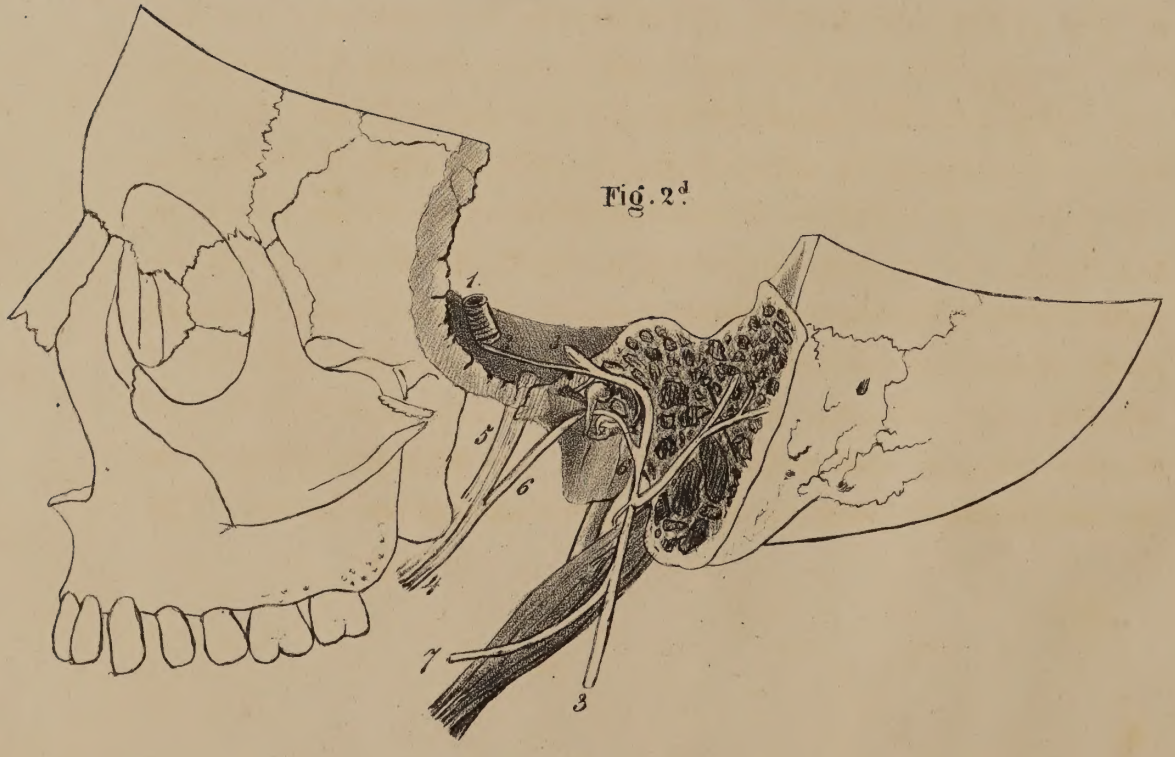


Fig. 2d.



Lehman & Duval Lithrs

PLATE IV.

The opposite plate represents the distribution of the 2d and 3d Branches of the 5th pair; the 1st Branch being seen on the last plate. The trunk of the 5th is seen (Fig. 1st, 1) cut at its point of emergence from the Brain. The Ganglion of Gasser (2) is also seen giving off three Branches. The detail of the 1st Branch (3) is not given. The 2d Branch called the Superior Maxillary, is seen to pass through the Foramen Rotundum, and immediately give off the Subcutaneus Malæ which bifurcates, and runs to the Malar Bone. Two branches called Pterygo-Palatine are then seen to proceed downward to the Ganglion of Meckel (14), which gives off two trunks, one backwards and one downwards. The former, which may be seen leaving the Ganglion and entering the Pterygoid Foramen (14), is called *Vidian;* and the latter, the continuation of which may be seen in Plate II. Fig. 2d, is called Posterior Palatine. The continuation of the Vidian is seen in Fig. 2d (2), where it may be observed joining the Portio Dura (3) in the Aqueduct of Fallopius, and leaving it again to become Chorda Tympani (6, 6), which finally unites with the Lingual, a branch of the third of the fifth. Pursuing the Infra-Orbital Nerve (13), it is seen to give off the Posterior Dental Branches (15), and then to emerge from the Infra-Orbitary Foramen, dividing into Palpebral and Labial. The

Anterior Dental Branches are given off, whilst the Nerve is still in the Infra-Orbitary Foramen.

The 3d Branch is seen to pass through the Foramen Ovale (Fig. 1st, 2) and divide into Anterior (8), and Posterior Branches (5). The Anterior (8) divides into five, viz: the two Temporal, Masseter, Buccal and Pterygoid. The Posterior (5) divides into the Superficial Temporal (6), the continuation of which is seen in (Pl. V. 7) the Inferior Dental (10, 11, 12) and the Lingual (9, 9), which is joined by the Chorda Tympani (7).

REFERENCES.

Fig. 1st. Represents the distribution of the 2d and 3d Branches of the 5th pair of Nerves.

1. Trunk of the 5th Pair.
2. Ganglion of Gasser.
3. Ophthalmic Branch, (first of 5th,) better seen in Pl. III.
4. Superior Maxillary Branch, (second of 5th.)
5. Inferior Maxillary Branch, (third of 5th.)
6. Superficial Temporal, (seen in Pl. V. 7.)
7. Chorda Tympani joining the Lingual.
8. Muscular Branch of third of 5th, which passes through the Ganglion of Gasser without arising from it, and is sometimes called a fourth root of the fifth pair. It is distributed to the Masseter, the Pterygoid, the Temporal and Buccinator Muscles. It is a Nerve of motion.

9. Lingual Branch to Tongue, supposed to be the Nerve of Taste. The minute distribution is seen in Pl. VII. Fig. 2d.
10. Inferior Dental to Lower Teeth.
11. Continuation of Do. called Submental.
12. Branch of Lingual to Submaxillary Gland, see Pl. VII, Fig. 2d, 3.
13. Infra-Orbital Nerve.
14. Ganglion of Meckel and Vidian Nerve.
15. Posterior Dental Nerve.
16. Posterior Palatine Nerve.

Fig. 2d. Exhibits the Course of the Vidian Nerve.

1. Carotid Artery.
2. Vidian Nerve entering the Cranium and joining
3, 3. The Facial Nerve, (*Portio Dura,*) in the Aqueduct of Fallopius.
4, 5. Lingual Nerve joined by
6. The Chorda Tympani.
7. Branch of Facial.

The relation of the Leg of the Malleus and the Incus to the Chorda Tympani is seen in this plate.

THE
JOHN CRERAR
LIBRARY

Fig 1.st

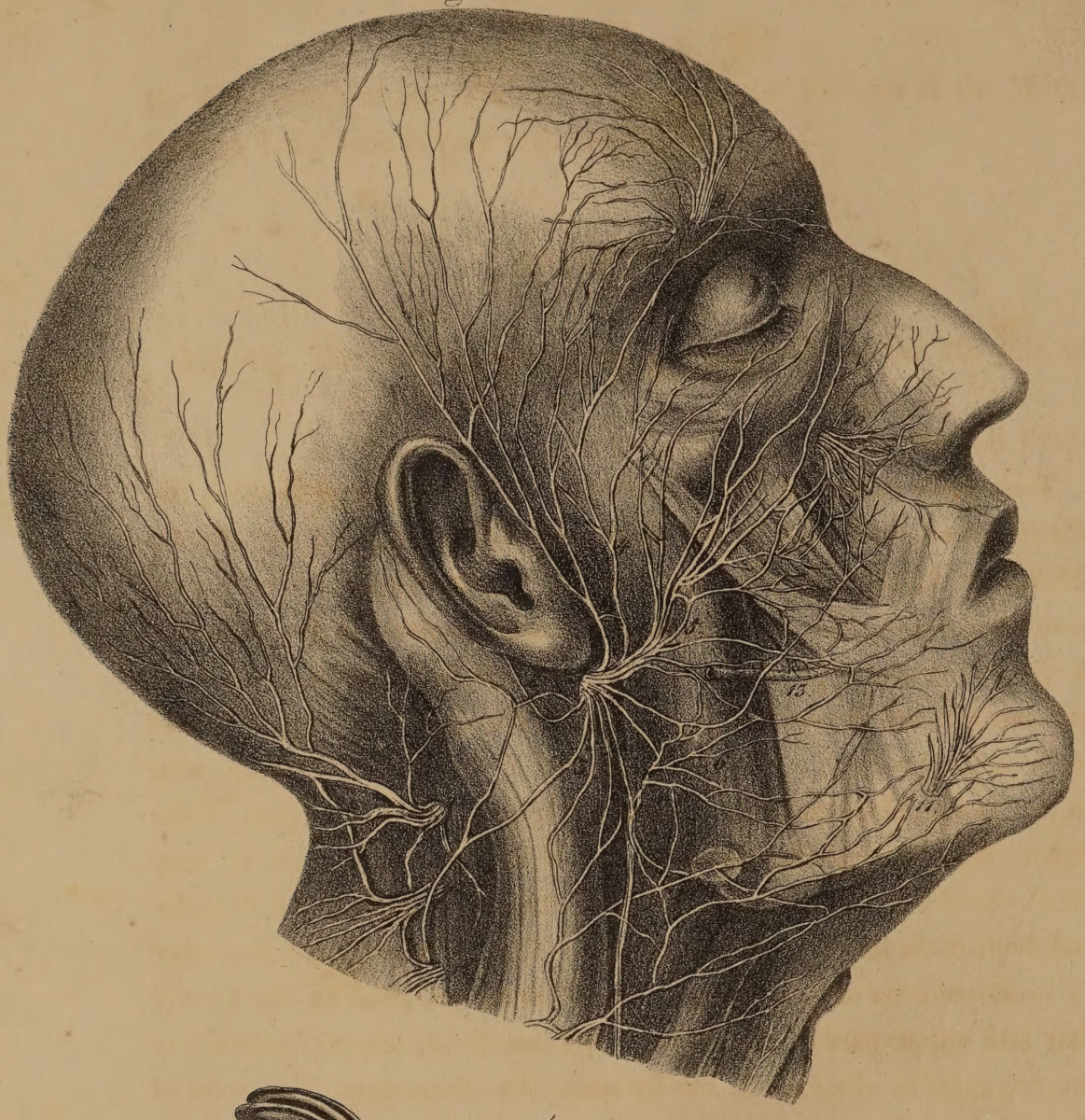
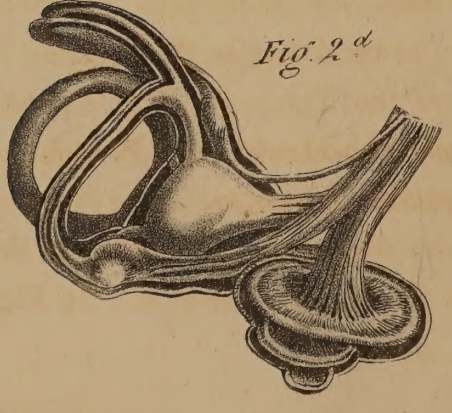


Fig. 2.d



Adrien Le Duval Lith.ph

PLATE V.

This plate represents the distribution of the 7th pair of Nerves, the *Portio Dura*, or Facial, being displayed in Fig. 1st, and the *Portio Mollis*, or Auditory in Fig. 2d. In Fig. 1st the Facial Nerve is seen soon after leaving the Stylo-Mastoid Foramen, to give off the Posterior Auricular Branch (2). It is then seen to divide in such a manner as to form the Pes Anserinus (3, 4, 5, 6), from which the several orders of branches proceed. The Temporo-Facial Branches (4, 5) are seen to run to the Muscles of the Temporal Region and upper part of the Face. The Buccal Branches two or three in number (5 to 6) may be observed crossing the Masseter, and running to supply the Muscles and Skin from the Eye to the Mouth. The Cervico-Facial Branches (3 to 6) are seen also running to the Muscles and Skin of the Lower Jaw and upper part of the Neck. Besides these, several branches of the 5th may be observed in the figure. The Superficial Temporal of the third of the 5th may be seen (7) receiving an Anastomosis from the Facial (8), and proceeding up on the Temporal Region; and the Supra (9) and Infra- (10) Orbital, and Sub-Mental (11) Branches may be observed emerging from their respective Foramina. The three upper Cervical Nerves (12, 12, 12) are also displayed, and from the first a branch may be seen ramifying over the Occipital Region. In Fig. 2d

the distribution of the Auditory Nerve over the Parietes of the Membranous Labyrinth is very well exhibited.

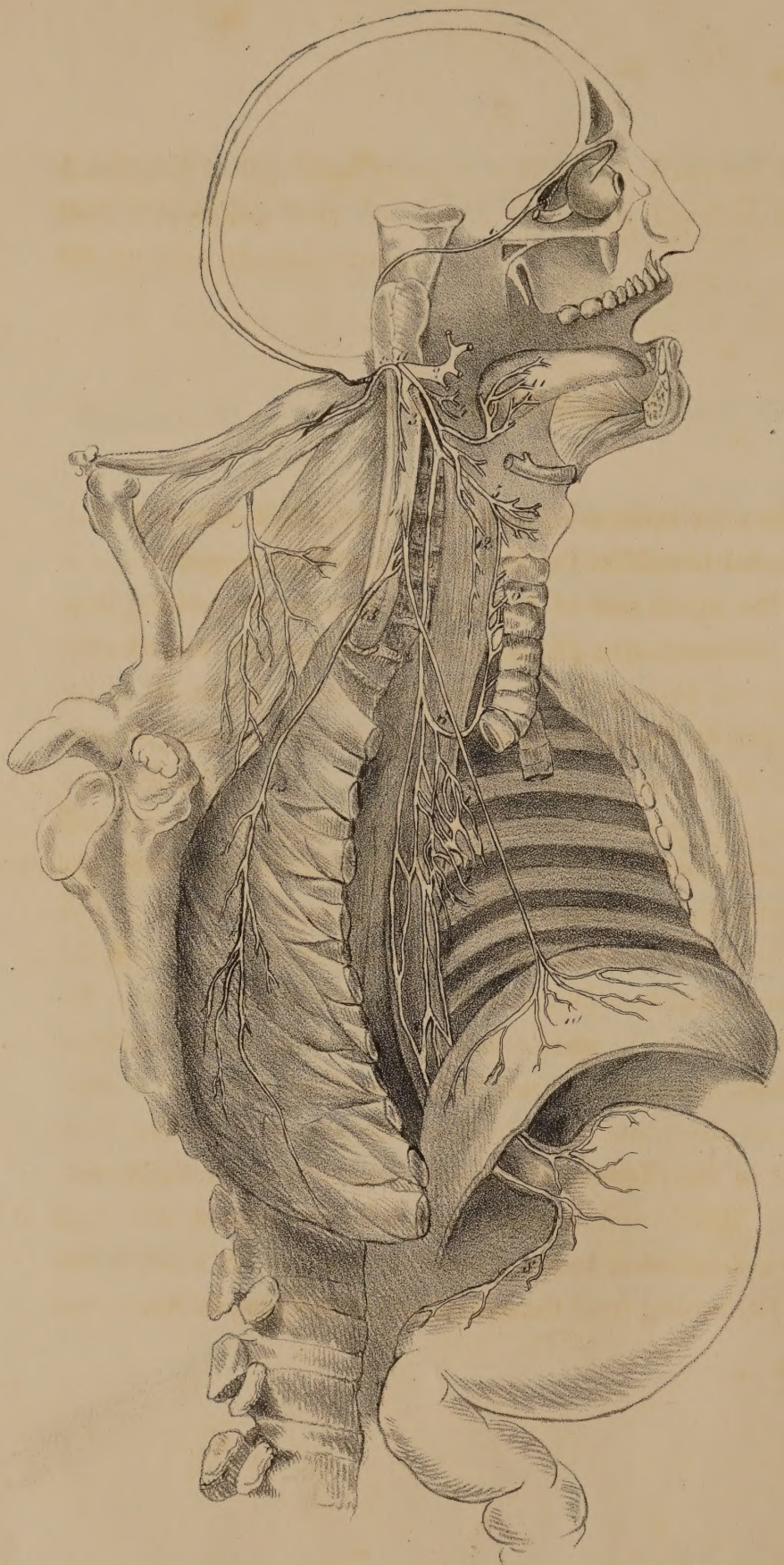
REFERENCES.

Fig. 1st. The distribution of the Portio Dura of the 7th pair, or Facial Nerve.

1. Trunk of Nerve emerging from Stylo-Mastoid Foramen.
2. Posterior Auricular Branch.
3. Cervico-Facial Branches.
4, 4. Temporo-Facial Branches.
6. Buccal Branches.
7. Superficial Temporal Branch of the third of the 5th Pair.
8. Anastomosis between it and the Facial.
9. Supra-Orbital Nerve or External Frontal, from the First of the 5th Pair.
10. Infra-Orbital Nerve, from the Second of the 5th.
11. Sub-Mental Nerve, from the Third of the 5th.
12, 12, 12. Three Upper Cervical Nerves, the first giving off the Occipital Nerve.
13. Duct of Steno.

Fig. 2d. Portio Mollis of the 7th, or Auditory Nerve, distributed to the Parietes of the Membranous Labyrinth.

THE
JOHN CRERAR
LIBRARY



Lehman & Duval Lith.ts

PLATE VI.

The opposite plate taken from Bell's plate of the Respiratory Nerves, is chiefly intended to exhibit the Par Vagum or Pneumogastric one of the trunks of the eighth pair of Nerves. It may be seen arising from the Medulla Oblongata (3), and proceeding downwards between the Carotid Artery and Jugular Vein. The first branch given off is the Superior Pharyngeal (4), which goes to form the Pharyngeal Plexus, and may be better seen in Pl. VII. (Fig. 1st, 12.) The Superior Laryngeal Nerve is seen to come off next (5), going to the superior part of the Larynx, and is also better displayed in Pl. VII. (Fig. 1st. 13.) The Recurrent or Inferior Laryngeal is next in order and is shown at (6, 6.) The Cardiac and Pulmonary Branches (7, 7), the branches to the Œsophagus (8), and those to the Stomach are also displayed. Besides these, the plate exhibits a plan of the ninth or Hypoglossal (11), and Descendens Noni (12), (for which the reader is referred to the next plate), and the Spinal Accessory (9, 9, 9), arising from the upper part of the Medulla Spinalis, and after piercing the Sterno-Cleido-Mastoid Muscle and Anastomosing with the second and third Cervical Nerve, distributed to the Trapezius Muscle. It also exhibits the Phrenic (10) arising from the second and third Cervical Nerve, and

distributed to the Diaphragm, as well as the *External Respiratory* of Bell (13) arising from the fourth and Fifth Cervical, and supplying the Serratus Magnus Muscle.

REFERENCES.

1. Fourth Pair, or Pathetic, (*Trochlearis,*) arising from the Valve of the Brain and going to the Trochlearis Muscle.
2. Portio Dura of the seventh pair; trunks cut off.
3. Origin of the Par Vagum, or Pneumogastric, the principal Nerve of the eighth pair.
4. Superior Pharyngeal Nerve, a branch of (3) to Muscles of Pharynx.
5. Superior Laryngeal Nerve.
6. Recurrent Nerve, or Inferior Laryngeal winding over the Arteria Innominata on the right side, and the arch of the Aorta on the left. It gives branches to the Heart, Lungs, Œsophagus, Thyroid Gland, Trachea, Pharynx and Larynx.
7. 7. Branches to the Heart and Lungs.
8. 8. Terminating Branches of the Par Vagum distributed to the Œsophagus and Stomach.
9. Spinal Accessory, one of the 8th pair to Sterno-Cleido-Mastoideus and Trapezius Muscles.
10. 10. Phrenic Nerve arising from the second and third Cervical and supplying the Diaphragm.

11. Hypoglossal, or ninth pair to the tongue. See next plate.
12. Descendens Noni.
13. External Respiratory Nerve of Bell, arising from the fourth and fifth Cervical, and distributed to the Serratus Magnus Muscle.

THE
JOHN CRERAR
LIBRARY

Fig. 1st

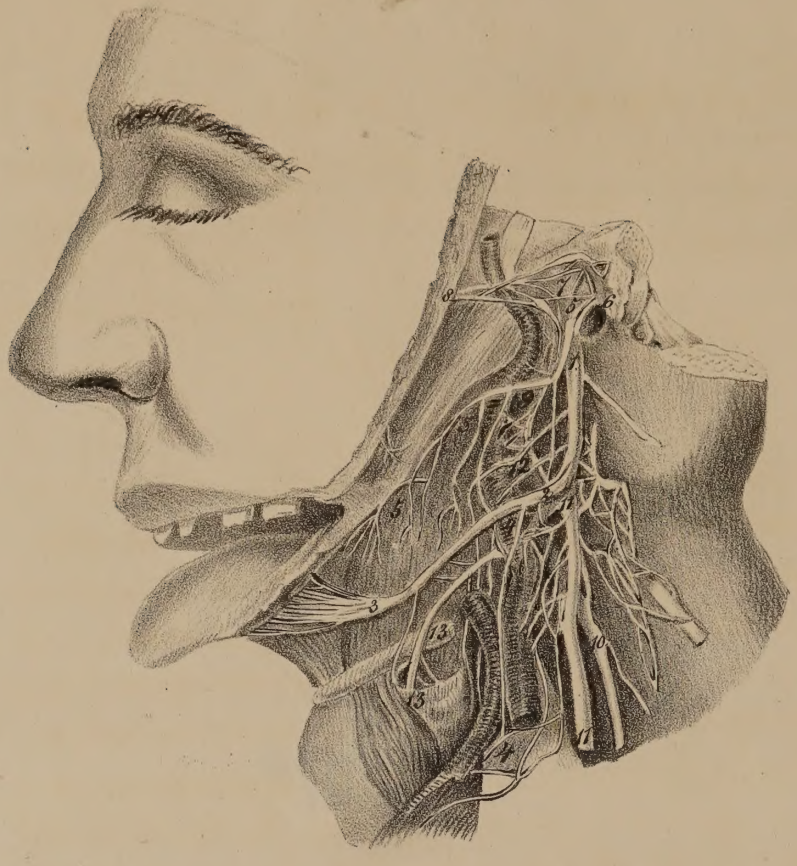
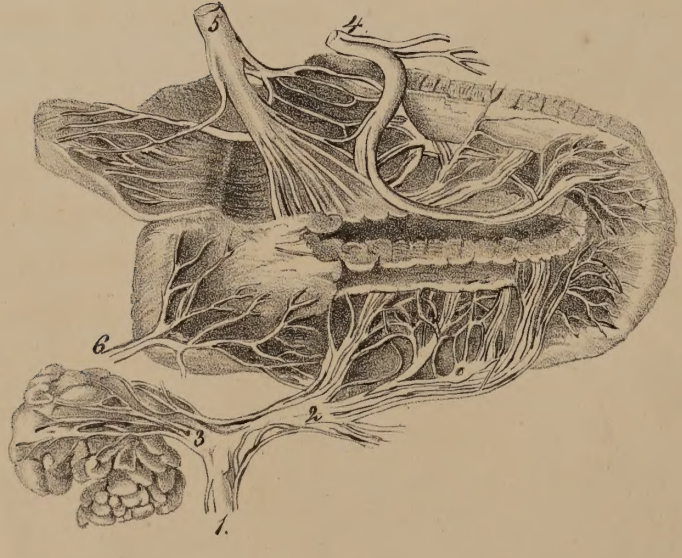


Fig. 2d



Lehman & Duval Lith.re

PLATE VII.

The opposite plate is chiefly intended to display the Glosso-Pharyngeal Nerve and the Hypoglossal, or ninth pair of Nerves; besides these, however, it exhibits several very important Nerves. In Fig. 1st the Hypoglossal (1, 2, 3) may be seen emerging from the Cranium in close union with the Par Vagum; at (2,) it is seen to leave the Vagus and after forming a curve to run to the Muscles of the Tongue. The ultimate distribution is seen in Fig. 2d, 5. About its centre a small Nerve is seen to leave it to proceed down the sheath of the vessels of the Neck to the Muscles in front of the Trachea (4, 4.) It is called the Descendens Noni. Just above this the Glosso-Pharyngeal, a Nerve of the eighth pair, may be seen emerging from the Foramen Lacerum Posterius with the Vagus, and going to the back part of the Tongue (5, 5, 5.) From its root is seen to arise a filament which runs upwards into the Tympanum, and divides into two branches. One (6) runs up and joins the Superficial Petrous Nerve (7), the other running from 6 towards 8, joins the commencement of the Sympathetic: this arrangement is called the *Anastomosis of Jacobson.* The distribution of the Glosso-Pharyngeal to the Tongue is seen in Fig. 2d, 6.

The plate also shows the commencement of the Par Vagum (11), and of the Great Sympathetic (10.)

Fig. 2d, exhibits the Nerves of the Tongue, being from the fifth, eighth and ninth pairs.

REFERENCES.

Fig. 1st. Exhibits the Glosso-Pharyngeal, one of the eighth pair, the Hypoglossal, or ninth pair, the Anastomosis of Jacobson, and the commencement of the Par Vagum and Sympathetic.

1. Hypoglossal and Par Vagum united for about an inch into a single trunk.
2. Hypoglossal leaving the Vagus.
3. Hypoglossal, dividing to supply the Muscles of the Tongue.
4. Descendens Noni, going to the parts in front of the Trachea.
5, 5, 5. Glosso-Pharyngeal, one of the eighth pair.
6. Tympanine Nerve from Glosso-Pharyngeal dividing to join
7. The Superficial Petrous and Sympathetic.
8. Sixth Pair and Superficial Petrous, the former below, the latter above.
9. The early part of the Great Sympathetic.
10. Superior Cervical Ganglion of Do.
11. Par Vagum, or Pneumogastric.

12. Superior Pharyngeal Nerve.
13. Superior Laryngeal Nerve.

Fig. 2d, Displays the Nerves of the Tongue from below.

1. Lingual Branch of fifth pair.
2. Main Trunk going to the Papillæ of the Tongue as far as the tip.
3. Branch to Submaxillary Gland.
4. Same Nerve, (*Lingual,*) on the other side.
5. Ninth Pair, or Hypoglossal.
6. Glosso-Pharyngeal supplying the back part of the Tongue.

THE
JOHN CREAN
LIBRARY

THE
JOHN CRERAR
LIBRARY

PI. VIII.

Fig. 1st

Fig. 3d

Fig. 2d

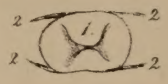
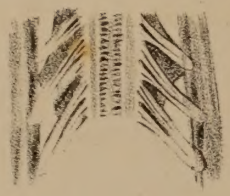


Fig. 6th

Fig. 5th



Lehman & Duval Lith.rs

PLATE VIII.

The opposite plate represents the origin of the Thirty-one Pairs of Spinal Nerves from the Medulla Spinalis, and the Structure of the Medulla.

Fig. 1st Exhibits the Medulla with the Dura Mater slit open and turned off on each side; the origins of the Nerves are seen, and between them the Ligamenta Denticulata, processes of the Pia Mater with their points attached to the Dura Mater. The Nerves are numbered and in classes, viz: 1 S. Oc. one Sub-Occipital; from 1 to 7 C. are the seven Cervical; from 1 to 12 D. are the twelve Dorsal; from 1 to 5 L. are the five Lumbar; and from 1 to 6 S. are the six Sacral Nerves. Besides this on the opposite side of the figure, B. P. refers to the Brachial Plexus, L. P. to the Lumbar Plexus, and S. P. the Sacral Plexus. The Nerves composing these Plexuses may be seen on the opposite side where they are numbered.

Figs. 2d and 3d Exhibit the arrangement of the Cineritious Portion in the centre of the Medulla, and the origin of the Anterior and Posterior Roots of the Spinal Nerves.

In Fig. 3d (1) is the Anterior Root, (2) the Posterior, (3) the Ganglion on the Posterior Root, and (4) the United Trunk.

Fig. 5th Shows the Anterior Commissure, and

Fig. 6th The Posterior Commissure of the Medulla Spinalis.

PLATE VIII.

THE
JOHN CRERAR
LIBRARY

Fig. 1st

Pl. IX.

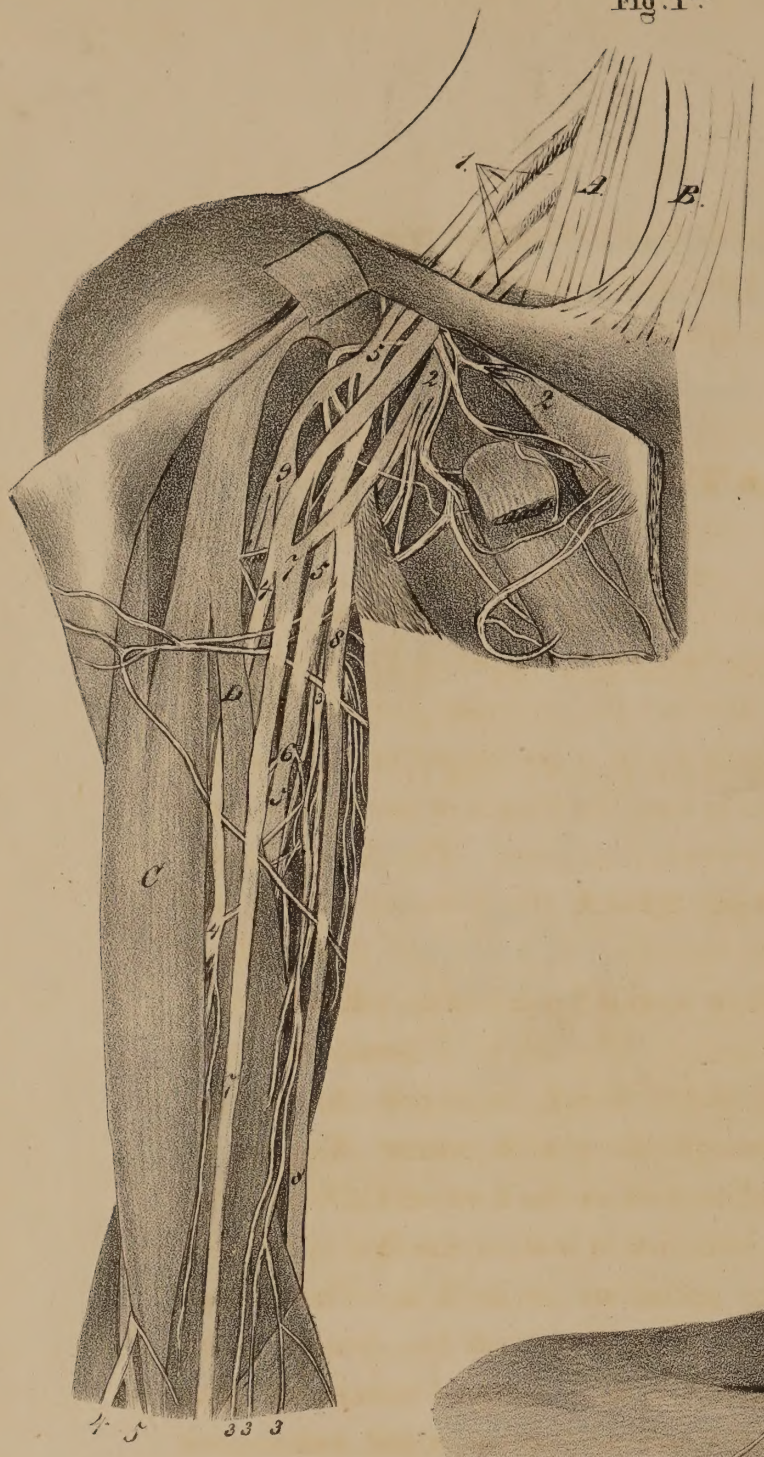
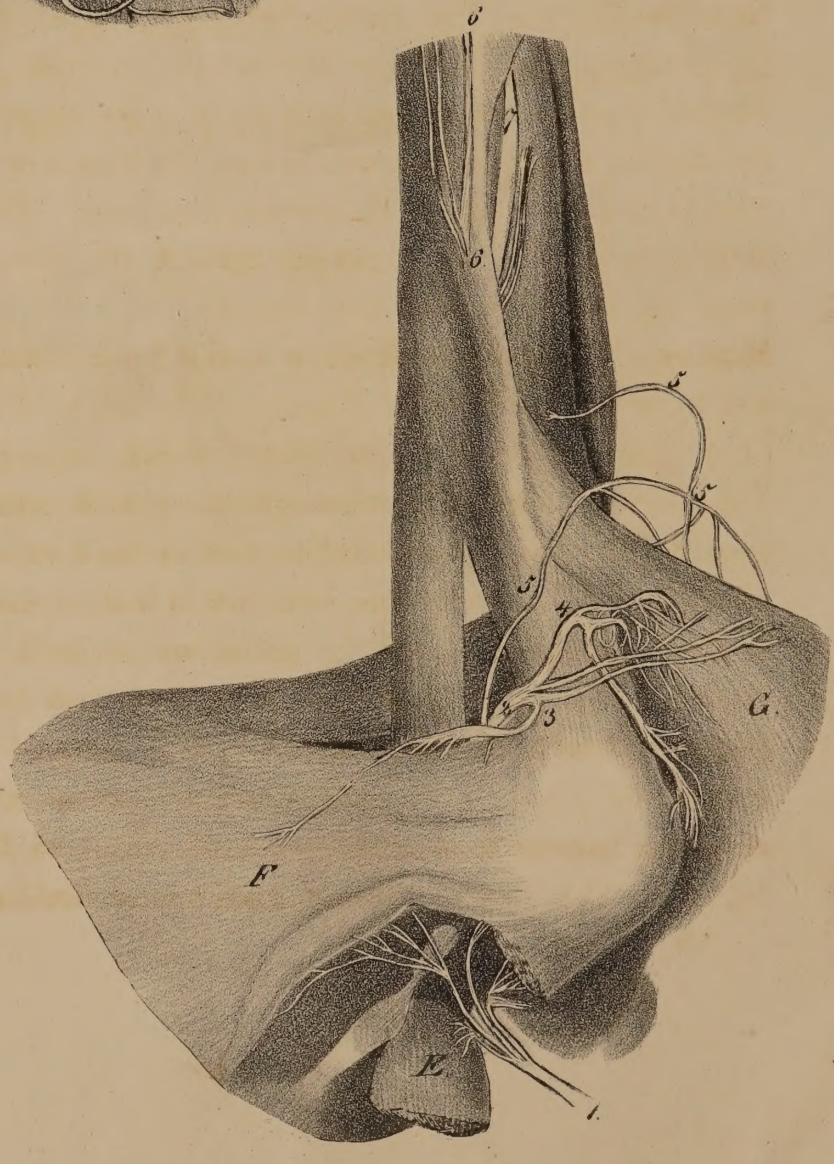


Fig. 2d



Lehman & Duval Lith.rs

PLATE IX.

The opposite plate exhibits the Nerves of the Shoulder and Arm as far as the Elbow. The Nerves forming the Brachial Plexus are seen (1) emerging from the fissure between the Scalenus, Anticus (A), and Medius Muscles, and passing between the Clavicle and first rib to reach the Axilla; they are there seen to form the Plexus or intertexture, and then to give off trunks to the surrounding parts. The *Nervus Scapularis* is seen (Fig. 2d, 1) passing through the Coracoid Notch, and supplying the Supra and Infra-Spinatus (E & F), and Teres Minor Muscles. The *Subscapulares* are seen going off (Fig. 1st, between 5 and 9) to the Subscapular Muscles. The *Nervi Thoracici* are seen (2, 2) going to the Pectoralis Major, Minor, and Subclavius Muscles. The *Nervus Axillaris*, or *Circumflexus* is seen arising (Fig. 1st, 9) from the Brachial Plexus, winding around the neck of the bone (Fig. 2d, 2), and dividing into two branches (3 and 4), the first distributed to the Infra-Spinatus, and the second to the Deltoid. The *Nervus Cutaneus Humeri* is also seen (Fig. 2d, 5, 5, 5) to be a branch of this going to the Skin near the Shoulder. The *Nervus Cutaneus Internus* is seen (Fig. 1st, 3, 3, 3) dividing into two branches, the continuation of which may be seen in the next plate (Fig. 2d, 3 and 4, and Fig. 1st, 1.) The *Nervus Musculo-Cutaneus* or External Cutaneous is

seen (4, 4, 4) perforating the Coraco-Brachialis Muscle, and then running under the Biceps, and reappearing at the bend of the arm; its continuation may be found (Pl. X. Fig. 2d, 1, and Fig. 1st, 2.)

The *Nervus Radialis*, or *Musculo-Spiralis* is seen (5, 5) arising from the upper part of the Plexus, and disappearing behind the Coraco-Brachialis Muscle, to wind around the Os Humeri (Fig. 2d, 7.) It gives off three principal branches; one of which, the *Ramus Superficialis Dorsalis*, is seen (Fig. 2d, 6, 6), the remaining two being found in the next plate. The trunks of the *Nervus Medianus* (Fig. 1st, 7, 7), and *Nervus Ulnaris* (8, 8) are also seen, and the student is referred to the next plate for their continuation.

REFERENCES.

Fig. 1st Represents the Nerves of the Shoulder and Arm as far as the bend.

A. Scalenus Anticus Muscle.

B. Sterno-Cleido-Mastoideus Muscle.

C. Biceps Flexor Cubiti Muscle.

D. Coraco-Brachialis Muscle.

1. Brachial Plexus, consisting of the *four* Inferior *Cervical* Nerves and the *first Dorsal.*
2. Thoracic Nerves, (*Nervi Thoracici,*) to the Pectoralis Minor and Major, and Subclavius Muscle.
3. Internal Cutaneous Nerve, (*Cutaneus Internus,*) to integuments on Ulnar side of Arm.

4, 4, 4. External Cutaneous Nerve, (*Musculo-Cutaneus,*) perforating the Coraco-Brachialis Muscle, and going to the integuments and Muscles on the Radial side of the upper extremity.

5, 5, 5. Musculo-Spiral Nerve winding around the Humerus.

6. Place of origin of the *Ramus Superficialis Dorsalis.*

6, 6. Median Nerve, (*Medianus.*)

8, 8. Ulnar Nerve, (*Ulnaris.*)

9. Circumflex Nerve, (*Axillaris,*) to Deltoid Muscle, &c.

Fig. 2d Exhibits the Nerves on the back of the Scapula and Shoulder.

E. Supra-Spinatus Muscle.

F. Infra-Spinatus Muscle.

G. Deltoid Muscle.

1. Nervus Scapularis passing through the Coracoid Notch to the Supra and Infra-Spinatus and Teres Minor Muscles.

2. Nervus Axillaris, continued from 9, Fig. 1st.

3. Branch to Infra Spinatus Muscle.

4. Branch to Deltoid Muscle.

5, 5, 5. Nervus Cutaneus Humeri, a branch of the Axillaris to the Skin of the Shoulder.

5. Ramus Superficialis Dorsalis a branch of the Musculo-Spiral Nerve.

7. Musculo-Spiral Nerve winding around the Os Humeri.

THE
JOHN CRERAR
LIBRARY

Fig. 1st

Fig 2d

Lehman & Duval Lith.r

PLATE X.

The opposite plate represents the continuation of the Nerves of the Arm to the Fore-Arm and hand.

The continuation of the *Cutaneus Internus* is seen Fig. 1st, 1, and Fig. 2d, 3, 4.

The continuation of the *Cutaneus Externus* is seen Fig. 2d, 1.

The continuation of the *Musculo-Spiralis* is seen (Fig. 2d, 2) as *Ramus Superficialis Anterior*, the Posterior branch of which is found in Fig. 1st, 2. The *Ramus Profundus Dorsalis* is seen at Fig. 1st, 3.

The continuation of the *Nervus Medianus* is seen in Fig 2d, 2 and 5, its course in the Fore-Arm being concealed by the Flexor Sublimis Digitorum and Flexor Longus Pollicis. It forms seven Digital Branches.

The continuation of the *Nervus Ulnaris* is seen Fig. 2d, 6, 6, 6. It gives off three Digital Branches. Its Dorsal Branch may be seen

in Fig. 1st, winding around the Wrist and supplying the Ulnar side of the back of the Hand.

REFERENCES.

Fig. 1st Exhibits the continuation of the NERVES on the *back* of the Fore-Arm.

1. The INTERNAL CUTANEOUS NERVE continued as far as the Wrist. As it is about terminating at the Wrist, a Nerve may be seen winding around the end of the Ulna to supply the back of the Hand on the Ulnar side; it is a branch of the Ulnar Nerve.
2. RAMUS SUPERFICIALIS ANTERIOR of the Musculo-Spiral Nerve.
3. RAMUS PROFUNDUS DORSALIS of the same Nerve seen deep in the Muscles, just as it comes through the Radial Extensors of the Fore-Arm.
4. Lower part of same Branch.

Fig. 2d Represents the Anterior Face of the Fore-Arm, and the continuation of the Nerves of the last plate upon it.

1. EXTERNAL CUTANEOUS, (*Musculo-Cutaneus.*)
2. MUSCULO-SPIRAL NERVE, to the right of which may be seen the Trunk of the Median Nerve.

3 and 4. INTERNAL CUTANEOUS NERVE.

5. MEDIAN NERVE giving off the Digital Branches to the *Thumb*, *first*, *second* and half of the *third* finger.

6, 6, 6. Ulnar Nerve giving Digital Branches to the *fourth* and remaining half of the *third* finger.

7. Branch of the Ramus Superficialis Anterior of the Musculo-Spiral Nerve.

THE
JOHN CRERAR
LIBRARY

Fig. 1st

Fig. 2d

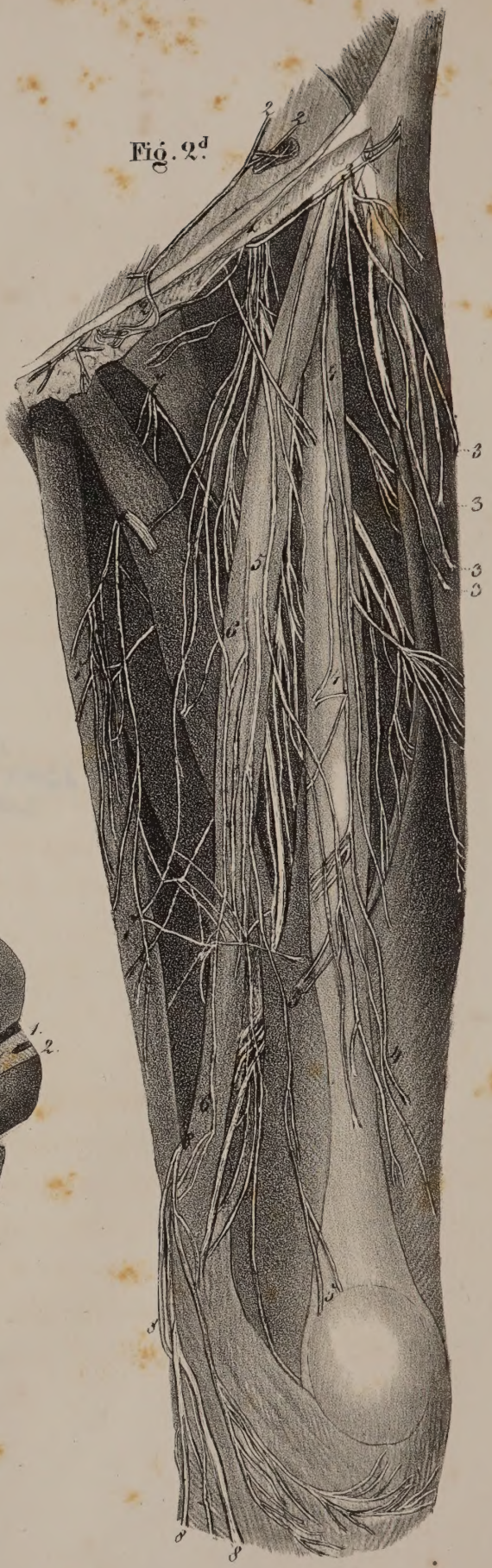
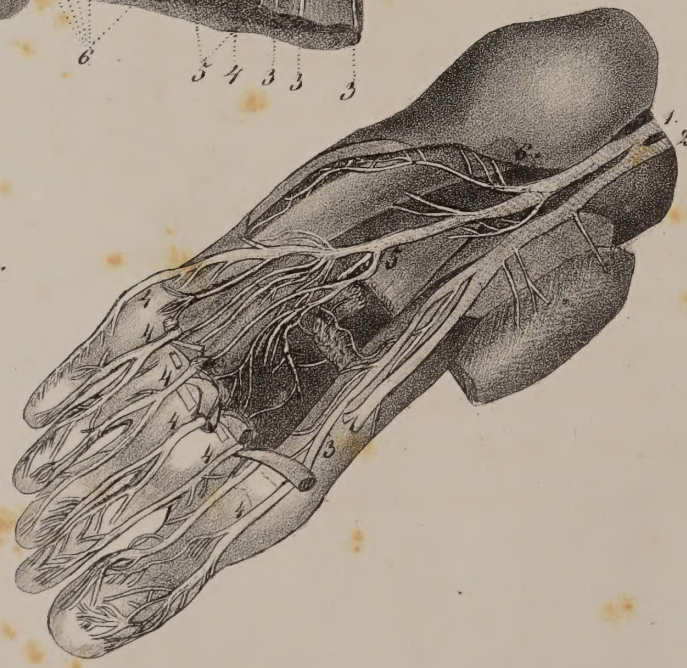


Fig. 3d



Lehman & Duval Lith.rs

PLATE XI.

The opposite plate represents the Nervous trunks which arise from the Lumbar Plexus, and supply the Anterior Part of the Lower Extremity as far as the Knee; the continuation to the foot being seen in the next plate.

The following is the order of the Trunks as they come off:

a. Abdomino-Crural Branches ; usually three coming from the two upper Lumbar Nerves (Fig. 1st, 1.)

b. Spermaticus Externus from the upper part of the Plexus to the Testicle (Fig. 1st, 2, 2, and Fig. 2d, 2, 2.)

c. Cutaneus Externus (Fig. 1st, 3, 3, and Fig. 2d, 3, 3, 3.)

d. Cutaneus Medius (Fig. 1st, 4, 4, and Fig. 2d, 4, 4.)

e. Cutaneus Anterior (Fig. 1st, 5, 5, and Fig. 2d, 5, 5.)

f. Cutaneus Internus (Fig. 1st, 6, 6, ond Fig. 2d, 6, 6.)

g. Cruralis Anterior arising from the middle of the Lumbar Plexus, and going out with the Femoral Vessels to be distributed to the Muscles on the front of the Thigh (Fig. 2d, 1), one of its branches, the *Saphenus*, running as far as the Foot (Fig. 2d, 8, 8, and Pl. XII. Fig. 2d. 1.)

h. Obturatorius coming from the middle of the Plexus, and

penetrating the Foramen in the Obturator Ligament to reach the heads of the Adductor Muscles (Fig. 2d, 7, 7.)

Besides these, Fig. 3d displays the Nerves of the Sole of the Foot derived from the Posterior Tibial Nerve. The Internal Plantar (2) giving Digital Branches to the *first three* toes, and the internal side of the *fourth*. The External Plantar (1) giving Digital Branches to the *little* toe, and the external side of the *fourth*.

REFERENCES.

Fig. 1st Exhibits the Abdomino-Crural, the Spermatic and Cutaneous Nerves of the Thigh.

1. Abdomino-Crural Branches.
2. Spermaticus Externus.
3. Cutaneus Externus.
4. ——— Medius.
5. ——— Anterior.
6. ——— Internus.

Fig. 2d Exhibits the Nerves on the Front of the Thigh.

1. Cruralis Anterior.
2, 2. Spermaticus Externus.
3. Cutaneus Externus.
4. ——— Medius.
5. ——— Anterior.
6. ——— Internus.

7. Obturatorius.
8, 8. Saphenus.

Fig. 3d Exhibits the Nerves of the Sole of the Foot.
1. External Plantar Nerve.
2. Internal Plantar Nerve.
3. First Digital Branch.
4, 4, 4. Remaining Digital Branches.
5. Branch to Interosseous Muscles.
6. Branch to Muscles of Little Toe.

Fig. 1st

Fig. 2d

Fig. 3d

PLATE XII.

The opposite plate represents the Nerves which arise from the Sciatic Plexus and the continuation of the *Saphenus Nerve* (Fig. 2d, 1.)

The order of the Branches from the Sciatic Plexus is as follows:

a. Nervi Glutæi to the Gluteal Muscles (Fig. 1st, 1 and 2.)

b. Nervus Pudendalis Longus Inferior going to the Perineal Muscles, Scrotum, &c. (Fig. 1st, 3.)

c. Ramus Femoralis Cutaneus Posterior to the Skin on the back of the Thigh, (Fig. 1st, 5, 5.)

d. Nervus Pudendalis Longus Superior accompanies the Internal Pudic Artery and is not seen in the plate.

e. The Nervus Ischiaticus, or the Great Sciatic the common trunk of the Sciatic Plexus (Fig. 1st, 4, 4, 4), sending the following branches.

Cutaneus Internus Superior (Fig. 1st. 6, 6.)

Cutaneus Internus Inferior (Fig. 1st, 7, 7.)

About half way down the Thigh it divides into *Posterior Tibial* and *Peroneal* (Fig. 1st, 9.)

The Peroneal Nerve, (*Nervus Peroneus*) divides into Peroneus Externus (Fig. 2d, 3), and the Tibialis Anterior (Fig. 2d, 2), having given off two *Peroneo-Cutaneous* branches. The *Peroneo-Cutaneus Externus* and *Internus*, the last one Anastomosing with the *Communicans Tibiæ*, (Fig. 2d, 4, and Fig. 3d, 8.) The Posterior Tibial (Fig. 3d, 1,) (*Nervus Popliteus*,) gives off the External Saphenus, or (*Communicans Tibiæ*,) which descends and Anostomoses with the *Internal Pereneo-Cutaneous* Nerve (Fig. 1st, 8, 8, and Fig. 3d, 4, 4), and then divides into the *External* and *Internal Plantar* Nerves seen in the eleventh plate.

REFERENCES.

Fig. 1st. Exhibits the branches of the Sciatic Plexus.

1 and 2. Nervi Glutæi.

3. Nervus Pudendalis Longus Inferior.

4. Nervus Ischiaticus.

5. Ramus Femoralis Cutaneus Posterior.

6. Cutaneus Internus Superior.

7. Cutaneus Internus Inferior.

8. Communicans Tibiæ, or External Saphenus.

9. Nervus Peroneus.

10. Peroneo-Cutaneus Internus.

Fig. 2d. Shows the continuation of the NERVES on the front of the Leg.

1. SAPHENUS NERVUS.
2. TIBIALIS ANTERIOR.
3. PERONEUS EXTERNUS.
4. PERONEO-CUTANEUS INTERNUS.

Fig. 3d Displays the continuation of the NERVES on the Posterior side of the Leg, A being the Internal, and B the External side.

1. NERVUS POPLITEUS, or TIBIALIS POSTERIOR.
2. COMMUNICANS TIBIÆ.
3. PERONEO-CUTANEUS INTERNUS.
4. Tendon of the *Plantaris Longus* Muscle.

INDEX.

	Plate
A	
Abdomino-Crural Nerves,	11
Anastomosis of Jacobson,	7
Anterior Commissure of Spinal Marrow,	8
——— Cutaneous Nerve of Thigh,	11
——— Crural Nerve,	11
——— Dental Nerve,	4
——— Tibial Nerve,	12
B	
Base of the Brain,	1
Brachial Plexus,	9
Buccal Nerve,	4
C	
Cardiac Nerves,	6
Chiasm of Optic Nerves,	3

	Plate
Chorda tympani, - - - - -	4
Ciliary Nerves, - - - - -	3
Circumflex Nerve, - - - - -	9

D

Digital Nerves of Hand, - - - -	10
—— " of Foot, - - - -	11

E

Eighth Pair of Nerves, - - - -	6, 7
External Cutaneous of Thigh, - - - -	11
——— Peroneal Nerve, - - - -	12
——— Plantar Nerve, - - - -	11
——— Respiratory Nerve, - - - -	6
——— Saphenus Nerve, - - - -	12

F

Fifth Pair of Nerves, - - - - -	1, 3, 4
First Pair of Nerves, - - - - -	1, 2
Fourth Pair of Nerves, - - - -	1, 3, 6
Frontal Nerve, - - - - -	3

G

Ganglion of Gasser, - - - - -	3, 4
——— of Meckel, - - - - -	4
Glosso-Pharyngeal Nerve, - - - -	7
Gluteal Nerves, - - - - -	11

	Plate
H	
Hypoglossal Nerve, - - - - -	6, 7
I	
Inferior Maxillary Nerve, - - - -	4
Infra-Orbital Nerve, - - - - -	4
Internal Cutaneous Nerve, - - - -	9, 10
——— " " of Thigh, - - -	11
——— Nasal Nerve, - - - - -	2
——— Plantar Nerve, - - - -	11
Ischiatic Nerve, - - - - -	11
L	
Lachrymal Nerve, - - - - -	3
Lenticular Ganglion, - - - - -	3
Lingual Nerve, - - - - -	4
M	
Median Nerve, - - - - -	9, 10
Medulla spinalis, - - - - -	8
Middle Cutaneous Nerve of Thigh, - - -	11
Musculo-Cutaneous Nerve, - - - -	9, 10
Musculo-Spiral Nerve, - - - - -	9, 10
N	
Nasal Nerve, - - - - - -	3
Ninth Pair, - - - - - -	6, 7
Nerves of Tongue, - - - - -	7

	Plate
Nerves of Spine,	8
—— of Base of Brain,	1
Nervus abdomino-cruralis,	11
—— *accessorius*,	6
—— *auditorius*,	5
—— *auricularis posterior*	5
—— *axillaris*,	9
—— *buccalis*,	4
—— *cardiacus*,	6
—— *chorda tympani*,	4
—— *ciliarius*,	3
—— *circumflexus*,	9
—— *cutaneus anterior cruris*,	11
—— " *externus cruris*,	11
—— " *externus brachii*	9, 10
—— " *internus*,	9, 10
—— " *internus cruris*,	11
—— " *medius cruris*,	11
—— *communicans tibiæ*,	12
—— *cruralis anterior*,	11
—— *descendens noni*,	6, 7
—— *facialis*,	5
—— *glosso-pharyngeus*,	7
—— *gluteus*,	12
—— *hypoglossus*,	6, 7
—— *infra-orbitalis*,	4
—— *ischiaticus*,	11

	Plate
Nervus laryngeus inferior, - - - -	6
—— " *superior*, - - - -	6, 7
—— *lingualis*, - - - - -	4
—— *maxillaris inferior*, - - - -	4
—— " *superior*, - - - -	4
—— *medianus*, - - - - -	9, 10
—— *motor oculi*, - - - - -	1, 3
—— " *externus*, - - - -	1, 3
—— *musculo-cutaneus*, - - - -	9, 10
—— *musculo-spiralis*, - - - -	9, 10
—— *nasalis internus*, - - - -	2
—— *obturatorius*, - - - - -	11
—— *occipitalis*, - - - - -	5
—— *olfactorius*, - - - - -	1, 2
—— *opticus*, - - - - -	1, 2
—— *ophthalmicus*, - - - - -	3
—— *palatinus posterior*, - - - -	2, 4
—— *patheticus*, - - - - -	1, 3, 6
—— *peroneus*, - - - - -	12
—— *peroneus externus*, - - - -	12
—— *peroneo-cutaneus*, - - - -	12
—— *pharyngeus superior*, - - - -	6, 7
—— *phrenicus*, - - - - -	6
—— *plantaris internus*, - - - -	11
—— " *externus*, - - - -	11
—— *pneumogastricus*, - - - -	6, 7
—— *popliteus*, - - - - -	12

	Plate
Nervus pudendalis longus inferior,	11
—— *radialis*,	9, 10
—— *scapularis*,	9
—— *spheno-palatinus*,	2
—— *sub-cutaneus malæ*,	4
—— *sub-scapularis*,	9
—— *tibialis anterior*,	12
—— " *posterior*,	12
—— *thoracicus*,	9
—— *trigeminus*,	4
—— *trochlearis*,	1, 3, 6
—— *vidianus*,	4
—— *ulnaris*,	9, 10

O

Obturator Nerve,	11
Occipital Nerve,	5
Olfactory Nerve,	1, 2
Optic Nerve,	1, 3
Ophthalmic Nerve,	3
Origin of Spinal Nerves,	8

P

Par vagum,	6, 7
Pathetic Nerve,	1, 3, 6
Peroneal Nerve,	12
Pes anserinus,	5

	Plate
Phrenic Nerve,	6
Pneumogastric Nerve,	6, 7
Popliteal Nerve,	12
Portio dura,	5
—— *mollis*,	5
Posterior Auricular Nerve,	5
——— Dental Nerve,	4
——— Palatine Nerve,	4
——— Tibial Nerve,	12

R

Radial Nerve,	9, 10
Ramus femoralis cutaneus posterior,	11
Retina,	3

S

Scapular Nerve,	9
Second Pair of Nerves,	1, 3
Sections of Optic Nerve,	3
Seventh Pair of Nerves,	1, 5
Sixth Pair of Nerves,	1, 3
Spheno-Palatine Nerves,	2
Spinal Accessory Nerve,	6
—— Marrow,	8
—— Nerves,	8
Sub-Scapular Nerve,	9
Sub-Mental Nerve,	4

	Plate
Superficial Temporal Nerve,	4, 5
Superior Laryngeal Nerve,	6, 7
——— Maxillary Nerve,	4
——— Pharyngeal Nerve,	6, 7
T	
Third Pair of Nerves,	1, 3
Thoracic Nerves,	9
Tongue, Nerves of	7
Tubercula quadrigemina,	3
U	
Vidian Nerve,	4
Ulnar Nerve,	9, 10

FINIS.